

# Role of conservative therapy in complicated giant pulmonary hydatid cyst cases

Complicated giant pulmonary hydatid cyst cases

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## Abstract

**Aim:** The aim of this study was to examine the role of conservative therapy in cavitory lesions secondary to capitonage suturing in the postoperative period for giant hydatid cyst cases within the context of the literature.

**Material and Methods:** The files of 346 patients who had been operated in our clinic due to a hydatid cyst between 01 May 2010 and 30 June 2020 were analyzed retrospectively. Epicrisis reports and operation notes of 52 cases that had been operated due to a giant hydatid cyst were examined. Files of 7 giant hydatid cyst cases with postoperative cyst cavity were included in the study.

**Results:** Cases were followed up for six months following the medical treatment. Surgical intervention was not performed for any of the seven patients whose treatment was completed, and their cavities closed spontaneously. The length of stay in the hospital was determined as 10-15 days (mean=13.1 days). Mortality and morbidity were not encountered in any of our cases.

**Discussion:** In case of cavity opening in the post-operative period in giant hydatid cyst cases, unless complications such as bronchopleural fistula, pneumothorax, empyema or fluid retention giving air-liquid level inside the cavity occur, it must be assumed that capitonage sutures were opened. We assume that implementation of infection treatment as the first option before surgery for the closure of the cavity may be more effective for spontaneous recovery of the patients without increasing their risks of mortality and morbidity.

## Keywords

Hydatid Cyst, Conservative Therapy, Cavitory Lesion, Capitonage, Giant Hydatid Cyst

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Introduction

Cyst Hydatid is the most common parasitic disease of the lungs. It is usually caused by *Echinococcus granulosus* and rarely by *Echinococcus multilocularis*. Carnivorous animals such as dogs and wolves are the primary hosts in the lifecycle of echinococcus, whereas humans, sheep and cattle are the intermediate hosts. While hydatid cyst disease in humans is frequently seen in the liver and lungs, it can be seen wherever the blood reaches when it is considered that scolex are carried by the blood. It is endemic in Mediterranean and Middle East countries, including Turkey. Hydatid cyst disease frequently presents with the involvement of the lower lobes of the lungs, especially the right lower lobes [1-5].

Hydatid cysts with a diameter larger than 10 cm are defined as giant cysts [6]. Giant cyst hydatid disease is more common in childhood compared to adults due to the elastic structure of the lungs [7]. Its clinical symptoms show a parallel with the size of the cyst. Chest pain, cough, shortness of breath and hemoptysis are among the most common symptoms [8]. Casoni and Weinberg complement fixation tests, which were previously used in diagnosis, are now replaced by serological tests. We did not apply these tests to the patients in our clinic.

Imaging procedures are frequently used for diagnosis. Giant hydatid cysts cause a more severe clinical picture by creating more pressure on the surrounding lung tissues compared to smaller cysts. When giant cysts are ruptured, they can cause obstruction in respiratory airways due to excess cyst liquid and the size of the cyst membrane requiring emergency intervention. The basic treatment of cyst hydatid disease is parenchyma protective surgery [9]. Surgical procedures are more difficult with giant cysts compared to smaller cysts and they cause more problems in the post-operative period.

The aim of this study was to examine the role of conservative therapy in cavitary lesions secondary to capitonnage suturing in the postoperative period in giant hydatid cyst cases within the context of the literature.

Material and Methods

This retrospective study was approved by the Institutional Review Board (2011-KAEK-25 2020/09-09) and the informed consents were waived by approval of the Institutional Review Board.

The files of the patients who had been operated in our clinic due to a hydatid cyst between 01 May 2010 and 30 June 2020 were analyzed retrospectively. Complications requiring surgical intervention, such as prolonged air leak, pneumothorax, bronchopleural fistula (BPF) or empyema were not included in the study.

PA chest radiography and thorax computed tomographies (BT) were used in the diagnosis as clinical imaging techniques. All patients were hospitalized and were followed up. All patients underwent rigid bronchoscopy and fiberoptic bronchoscopy (FOB) and were assessed in terms of BPF. Moreover, complete blood count, sedimentation, C-reactive protein (CRP) and blood biochemistry examinations were applied for each patient and active infection and organ function disorders were investigated. Broad-spectrum antibiotherapy was initiated in all cases, and they were followed up with daily PA chest radiographies. After

discharge, the patients were followed up in 10 day-periods in the first month and then once a month for six months.

Results

The files of 346 patients who had been operated in our clinic due to a hydatid cyst were analyzed. Epicrisis reports and operation notes of 52 cases that had been operated due to a giant hydatid cyst were examined. Files of 7 giant hydatid cyst cases with postoperative cyst cavity were included in the study (Figure 1).

The age and gender distribution of the cases and general characteristics of the cysts are given in Table 1. The age distribution of our cases was 21-40 (mean 30.7) years old. Application complaints of the patients were non-specific respiratory system symptoms, such as cough, expectorating, shortness of breath, fever and fatigue.

The cyst was located in a single lung in all of the seven cases with cavity-opening complication in the post-operative period. The cyst was most frequently detected in the right lung (n=5; 71.4%) and in the lower lobe (n=5; 71.4%) (Figure 2). Giant cyst hydatid diagnosis was made by measuring the cavity diameter using thorax BT in all cases. The measured cyst cavity diameter was 10-15 cm (mean 12.4 cm). Posterolateral thoracotomy + cystotomy + capitonnage were applied in all cases as operation methods.

The mean time of postoperative complication development time was 48.8 (30-65) days. Application complaints of the patients were frequent cough and expectorating. In the first PA chest radiography it was detected that the cyst cavity recurred in the operated lung lobe but there was no air-liquid level inside the cyst. On the other hand, complications such as pneumothorax, empyema or abscess were not detected radiologically. Complete blood count, biochemistry, sedimentation and CRP were determined for all patients. Infection parameters such as leukocyte count, sedimentation and CRP levels were measured. All patients were examined in terms of clinical, radiologic and bronchoscopic BPF. There was no evidence of fistula in any of the cases. Broad spectrum antibiotics were initiated in cases referring to infectious diseases. Patients whose treatment was completed in ten days were followed up with daily PA chest radiography. Cases were followed up for six months following medical treatment. The cavity closed spontaneously without surgical intervention in the seven patients whose treatment

Table 1. Demographic characteristics of the cases

	Patients						
	1	2	3	4	5	6	7
Age (year)	21	29	25	30	34	36	40
Gender	F	F	M	F	F	F	M
Localization of hydatid cyst	Bottom right	Bottom left	Upper right	Bottom right	Bottom left	Upper right	Bottom right
Time of complication (day)	42	50	55	40	60	65	30
Hospitalization time (day)	10	14	15	14	14	10	15

F: Female; M: Male

was completed (Figure 3). The length of stay in the hospital was determined as 10-15 days (mean 13.1 days). Mortality and morbidity were not encountered in any of our cases.

Discussion

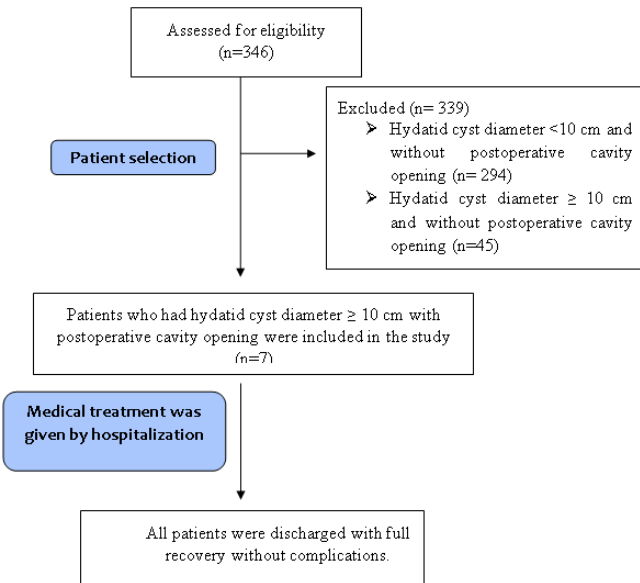


Figure 1. Study flow diagram

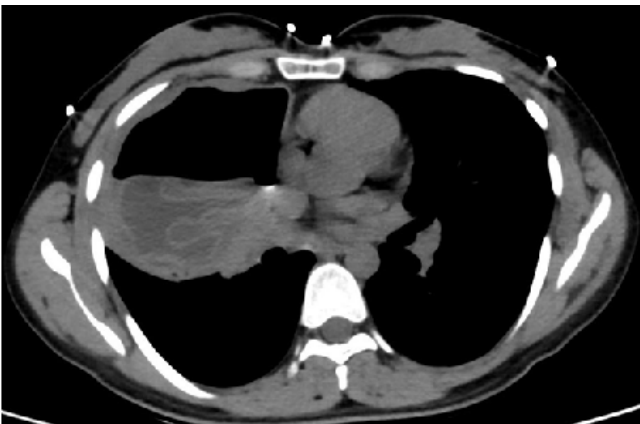


Figure 2. A case of a giant hydatid cyst detected in the right lung and in the lower lobe in pre-operative period.

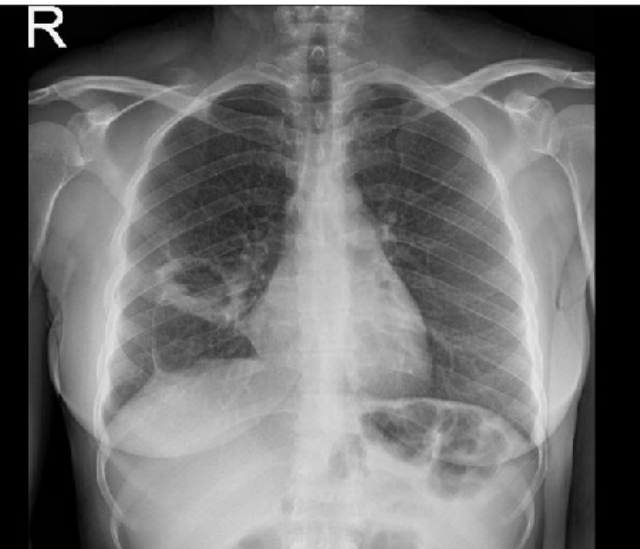


Figure 3. The cavity closed spontaneously without surgical intervention.

Giant cyst hydatid disease can reach a large extent to cover the entire lobe of the lung. This situation is explained by the higher elasticity of lung tissue compared to other tissues. Giant pulmonary cysts are more common in children compared to adults due to the higher lung elasticity in children [10]. Symptoms and findings of giant pulmonary cyst hydatids are not different from those of simple cyst hydatids. Depending on the cyst size, its location, and the presence of complications, patients may experience dyspnea, chest pain, hemoptysis, fever, membrane expectoration (hydoptysis) and allergic reactions. Enlargement of the pulmonary giant cyst hydatid from 10 cm in diameter to a diameter that fills the entire hemithorax can only be explained by the elastic structure of the cyst and its location away from mediastinal structures [11,12].

Cyst hydatid diagnosis is made with radiologic examinations and serologic methods. PA chest radiography, thoracic ultrasonography, thorax computed tomography, thorax magnetic resonance and echocardiography for cardiac involvement in case of necessity are among the most preferred radiologic methods [13]. Basic treatment in cyst hydatid cases is parenchyma protective surgery [13,14]. The aim in surgery is the eradication of the parasite, prevention of intraoperative rupture and closing of the residual cavity. Surgical options include cystectomy, cystotomy, enucleation wedge resection, segmentectomy and lobectomy in case of cysts causing parenchyma destruction by covering more than 50% of one lobe or causing chronic abscess, bronchiectasis or severe hemoptysis. Lobectomy was not applied to any of the cases included in this study.

Cystotomy and capitonnage are the most preferred methods of surgical treatment. We also preferred this method of surgery in all our cases. Medical treatment is applied in small uncomplicated cysts, in patients who do not tolerate surgical operation and in cases that reject surgical treatment [13-14]. Surgical treatment was applied in all our cases. In a previous study it was mentioned that medical treatment should begin at least 4 days prior to surgery, and albendazole should be used for at least one month, while mebendazole should be used for at least three months [16]. Despite this, other studies assert that the use of albendazole and mebendazole in the control of this disease in the pre-operative period may cause cyst perforation [13,17]. In our clinic, we did not apply routine albendazole treatment in non-perforated cyst hydatid cases in the pre-operation period. In the postoperative period, we used 10mg/kg of albendazole for three months to prevent recurrence and checked routine liver functions each month.

There was no liver or any other organ involvement in any of the seven cases that had been operated due to giant cyst hydatid and cavity opening complication had developed after surgery. Untreated cysts may open into the bronchus and pleura, causing serious complications requiring invasive intervention. Complications such as atelectasis, prolonged air leak, pneumothorax, empyema, recurrence, BPF and cavity opening can develop after surgery [18]. The recurrence rate in the post-operation period in cyst hydatid cases varies from 4.6% to 12%. The first place in etiology is occupied by surgery that is performed inattentively to prevent pleura spread [19]. According to one study, the most frequent post-operation

complication was atelectasis (17.5%) [20]. In another study, it was emphasized that the most common complication was prolonged air leak [1]. Considering all of our cyst hydatid cases, our most common post-operative complication was atelectasis with a rate of 13.7%. We applied medical treatment to all of our seven giant cyst hydatid cases that developed very annoying complications such as opening of the cavity under capitonage after surgery. The common feature of our cases was that we detected a complication of BPF, which plays role in cavity opening.

### Study limitations

The retrospective design was the main limitation of this study.

### Conclusion

In case of cavity opening in the post-operative period in giant hydatid cyst cases, unless complications such as BPF, pneumothorax, empyema or fluid retention giving air-liquid level inside the cavity occur, it must be assumed that capitonage sutures were opened. We assume that implementation of infection treatment as the first option before surgery for closure of the cavity may be more effective in spontaneous recovery of patients without increasing their risk of mortality and morbidity.

### Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

### Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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### Conflict of interest

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